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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,364	03/10/2004	Pieter Kruit	3531P014	4344
8791	7590	12/13/2005	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			BERMAN, JACK I	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/797,364	Applicant(s) KRUIT, PIETER	
	Examiner Jack I. Berman	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 14-32 is/are rejected.
- 7) ☒ Claim(s) 5-13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/19/05, 9/30/05</u> | 6) <input type="checkbox"/> Other: ____ |

Applicant's arguments filed September 8, 2005, with respect to the restriction requirement have been fully considered and are persuasive. The restriction requirement has been withdrawn.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 14-28, 30, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Roelofs et al. In sections 3.1.1 and 3.1.2 on pages 268-270, the Roelofs et al. article discloses an apparatus for generating a plurality of charged particle beamlets, comprising:

- a charged particle source ("source" in Figure 10) for generating a diverging charged particle beam;

- a converging means ("beam focussing gauze") adapted for refracting a diverging charged particle beam into a substantially parallel charged particle beam for generating a plurality of substantially parallel charged particle beamlets (See Figure 8 and the related discussion on page 268 and lines 7-8 on page 270.), which inherently requires that the charged particle source be arranged in the focal plane of the converging means and that the converging means has a collimation plane;

- a lens array ("beam splitting gauze") comprising a plurality of lenses, located between said charged particle source and said converging means. (See Figure 9 and lines 5-6 on page 269 for the explanation of how the gauze mounted in the electrostatic lens field functions as an array of lenslets.) Roelofs et al. uses electrons as the charged particles and the lens array disclosed is

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an array of electrostatic lenses comprising an aperture plate that has an electrically conducting surface and means for defining the electrostatic potential of said surface, and means for defining a equipotential surface substantially parallel to said aperture plate at a distance from said aperture plate at a different potential than said aperture plate itself, said means for defining an equipotential surface comprising a plate having a through hole at the location of the beam of beamlets, in particular a circular hole having its center at the optical axis of the charged particle beam, one such plate being located between the source and the lens array and another such plate being located between the array of converging elements and the converging means. The converging means used in the Roelofs et al. apparatus comprises a deflector array ("beamlet blanker array") with deflectors aligned with the beamlets. Such a deflector inherently requires a controller for applying different voltages to the different deflectors of the deflector array and these voltages must inherently be set to have each deflector assert a deflecting effect proportional to the distance of a deflector with respect to the optical axis of the beam in order for the individual beamlets to be directed back towards the optical axis as is shown in Figure 10. At lines 2-3 on page 270, Roelofs et al. teaches to compensate for aberrations of further converging devices of the converging means by "introducing a proper charge distribution on the gauze", i.e. the lens array that constitutes an end plate providing an electrode in an electrostatic lens. The introduction of such a charge distribution would inherently require another voltage controller. Roelofs et al. discloses the apparatus for use in an electron beam lithography system, which, by definition, produces substrates processed by the electron beam lithography system.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23, 29, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roelofs et al. Since, as is discussed above, Roelofs et al. teaches at lines 2-3 on page 270 to compensate for aberrations of further converging devices of the converging means by “introducing a proper charge distribution on the gauze” and the deflector array is immediately adjacent to the focussing gauze, it would have been obvious to a person having ordinary skill in the art to provide the “proper charge distribution” by means of the voltages set on the deflectors. Although the article is directed to an electron beam lithography system, it is well known in the art that ions are functionally equivalent to electrons as charged particles so far as electrostatic optical systems are concerned, so it would have been obvious to a person having ordinary skill in the art to use the apparatus disclosed in the Roelofs et al. article to control ions instead of electrons. Also, since electron beam lithography was developed from electron beam microscopy, it would have been obvious to a person having ordinary skill in the art that the electron optical system disclosed in the article could also be used for charged particle microscopy.

Claims 5-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Le Poole discloses a charged particle beam lithography system comprising an aperture array (gauze 18) between a charged particle source and a converging means to split up the diverging beam from the charged particle source into a plurality of charged particle beamlets.

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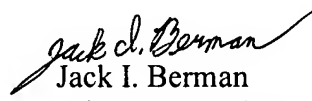
The following is a statement of reasons for the indication of allowable subject matter:

Nothing in the prior art suggests combining Le Poole's aperture array (gauze 18) in addition to the lens array (beam splitting gauze) used by Roelofs et al. or making either the aperture array or the lens array concave with respect to the charged particle source.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack I. Berman whose telephone number is (571) 272-2468. The examiner can normally be reached on M-F (8:30-6:00) with every second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jack I. Berman
Primary Examiner
Art Unit 2881

jb
12/8/05